

**TECHNICAL REVIEW AND EVALUATION OF
APPLICATION FOR AIR QUALITY CONTROL PERMIT
FOR EXISTING SOURCE**

PERMITTEE: El Paso Natural Gas Co. DATE: August 6, 1997

ADDRESS: P.O. Box 1492 PERMIT NO.: 1000165

El Paso, TX 79978 NEW SOURCE: N

EQUIPMENT LOCATION: 20 E of Kingman, 1/2 mile N off I-140, Exit 71 RENEWAL: Y

Kingman, Mohave County, AZ 86471 TITLE V SOURCE: Y

PERMIT CLASS: I PORTABLE: N

PERMIT ENGINEER: Sandy Farace

APPLICABLE REGULATION	CONDITION	MEETS CONDITION			SEE RMK NO.	RVWD BY
		YES	NO	N/A		
R18-2-326	A. <u>ADMINISTRATION</u>			X	1	SF1
	1. Have all applicable fees been paid?					
Appendix 1 R18-2-304.E	2. Has a complete application been submitted? (attach completeness checklist)	X				SF1
R18-2-304.G	3. Has additional information necessary to address any requirements which became effective after the application was filed been submitted? (if applicable)			X		SF1
R18-2-307.A	4. Has a copy of the complete application been submitted to the EPA for review (only required if the application is for a Class I permit)?	X				SF1
R18-2-305	6. Confidentiality			X		SF1
	a. If portions of the application were submitted with a notice of confidentiality, has the applicant been notified as to the Director's confidentiality determination?					
	b. If portions of the application have been determined by the Director to be confidential, has a notice of confidentiality been included in the file?			X		SF1
R18-2-101.60 and 61	7. Is the source classified as a major source as per R18-2-101.61 or a major modification as per R18-2-101.60?	X				SF1
R18-2-306.8.e	8. Has all information and records requested by the Director or the Hearing Board been submitted?	X				SF1
R18-2-310, 309, and 327	9. Have all emission inventory questionnaires, excess emission reports, and compliance certifications been submitted?	X				SF1
ARS § 49-402	10. Does the Arizona Department of Environmental Quality have jurisdiction over this source?	X			2	SF1
Articles 7, 9 and 11	B. <u>AIR POLLUTION CONTROL EQUIPMENT</u>	X				
	1. Have the parameters of all process equipment which may cause or contribute to air pollution been identified?					SF1

APPLICABLE REGULATION	CONDITION	MEETS CONDITION			SEE RMK NO.	RVWD BY
		YES	NO	N/A		
	2. Have all air releases containing regulated air pollutants (including any hazardous air pollutants) been identified and characterized as to strength, concentration, and type of pollutant?	X				SF1
Articles 7, 9 and 11	3. Has the applicant demonstrated that each emission unit is so designed, controlled, or equipped with such air pollution control equipment that it may be <u>expected</u> to operate without emitting or causing to be emitted air contaminants in violation of A.A.C. Title 18, Chapter 2, Articles 7, 9, and 11? (Attach calculations.)			X	3	SF1
Article 6	4. Has the applicant demonstrated that each non-point emission unit is so designed, controlled or equipped with such air pollution control equipment that it may expect to comply with requirements of Article 6 emissions from existing and new non-point sources?	X			4	SF1
A.R.S. §49-427.C	5. Has the source been constructed according to the prior permit? (if not, the source must first obtain a permit revision before receiving a permit renewal)	X			5	SF1
Articles 7, 9 and 11	6. Has the source demonstrated that proposed positive control techniques can be maintained at full operational capacity? (Attach calculations.)	X			3	SF1
Articles 6, 7 & 9	C. REGULATORY SUMMARY					
	1. Has the applicant supplied sufficient material to demonstrate that emission standards can be met for the following:					
	a. Visible emissions	X				SF1
	b. Particulate emissions	X				SF1
	c. Sulfur dioxide emissions	X				SF1
	d. Total sulfur emissions			X		SF1
	e. Volatile organic compounds	X				SF1
	f. NO _x emissions	X				SF1
	g. Other pollutants _____	X				SF1
Article 11	2. Has the applicant demonstrated the emissions from the facility are such that they will meet hazardous air pollutant standards?			X		SF1
R18-2-312	3. Have any performance tests required by the prior permit been conducted?	X			6	SF1
R18-2-312	4. Has a visible emission test been performed? (if applicable)			X		SF1
R18-2-306	5. Does the permit contain all requirements which became applicable to the source after the prior permit was issued?	X				SF1

APPLICABLE REGULATION	CONDITION	MEETS CONDITION			SEE RMK NO.	RVWD BY
		YES	NO	N/A		
R18-2-309.2	6. Does the permit contain a requirement for the submittal of compliance certifications (at least annually)?	X				SF1
R18-2-309.5	7. Does the permit contain a compliance plan which outlines the procedures used to comply with all requirements and specifies the means for demonstrating compliance?	X				SF1
R18-2-309	8. Does the permit contain a compliance schedule to be used to achieve compliance with those items with which the source does not currently comply.			X	7	SF1
R18-2-306.3, 4	9. Does the permit contain sufficient monitoring, reporting and recordkeeping requirements to determine whether or not the source is in compliance at any time?	X				SF1

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 1000165**

REMARKS

REMARK NUMBER	REMARKS	REVIEWED BY
1.	This application is submitted for renewal of existing operating permit #M151198-96 for El Paso's Hackberry Compressor Station.	SF1
2.	The facility is located near Kingman, Mohave County. ADEQ has jurisdiction over this source.	SF1
3.	El Paso operates two turbines for natural gas transmission. No control equipments are used to control emissions from burning natural gas.	SF1
4.	El Paso will control emissions of non-point sources by maintaining gravel, adding fresh vegetation and using dust suppressants and wetting agents.	SF1
5.	The two GE turbines were installed in 1966. An operating permit was obtained in 1993 and expired July 16, 1996.	SF1
6.	El Paso has to date no records of any violation.	SF1
	ADDITIONAL REMARKS	
7.	Compliance status: According to Field Activity Report (FAR) #16774 dated February 10, 1997, El Paso's Hackberry Compressor Station is in compliance.	SF1

REMARK NUMBER	REMARKS	REVIEWED BY
8.	<p>EPNG has proposed the following exemptions:</p> <p><i>(1) <u>Lubricating oils</u> - EPNG stores oils in lubricating tanks at the Hackberry facility that are less than 10,000 gallons and have a vapor pressure less than the fuel oils exempted in R18-2-701.21. EPNG proposes that ADEQ exempt the oil storage tanks from R18-2-710, or list this requirement as inapplicable.</i></p> <p>ADEQ agrees that monitoring, reporting and recordkeeping requirements are not applicable to Hackberry's oil tanks and has listed this activity as insignificant.</p> <p><i>(2) <u>Sulfur and fuel bound nitrogen monitoring</u> - EPNG requests to be exempted from fuel bound nitrogen monitoring because a zero value was used for the calculation of nitrogen oxides in 60.332(a). EPNG also requests to be exempted from sulfur monitoring because their turbines burn only pipeline quality natural gas that contains less than 0.8% by weight sulfur, as required by its FERC Tariff.</i></p> <p>According to EPA Memorandum dated August 14, 1987 titled <u>Authority for Approval of Custom Fuel Monitoring Schedules Under NSPS Subpart GG</u>, fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbine. However, sulfur monitoring is still required.</p>	SF1

TECHNICAL REVIEW OF PERMIT NUMBER 1000165
(El Paso Natural Gas Company, Hackberry Compressor Station)

General Comments

El Paso Natural Gas Company (EPNG) provides natural gas transportation services for natural gas suppliers and end users throughout the southwestern United States. EPNG owns and operates a large pipeline network for which the Hackberry Compressor Station serves as one of the gas compression locations. Compression is needed to maintain enough pressure in the pipeline to keep the gas flowing.

The Hackberry station operates two regenerative cycle gas turbines to drive the compression unit. The gas turbines are powered by the combustion of natural gas. The gas turbine stacks are the primary source of air pollutant emissions. The primary pollutant present in the stack gases resulting from combustion of natural gas is NO_x. Formaldehyde, SO₂, CO, and VOCs are other trace pollutants present in the stack gases. Other equipment on site is comprised mainly of valves, compressor seals, connections and associated piping, and emissions from these units are mainly trace amounts of VOCs.

Regulatory History

The first air quality permit was issued to the Hackberry compressor station as Installation Permit #65030 on 5/8/91. The purpose of this permit was to allow EPNG to uprate the turbines at Hackberry from 6950 hp to 7298 hp. Operating Permit number M151198-96 was subsequently issued on 7/16/93. The most relevant conditions of this permit are:

Emission Limits

1. Visible emissions shall not exhibit greater than 40% opacity
2. "Maximum allowable emission rates" Table (for *each* turbine):

NO_x: 210.68 tpy

SO₂: 0.13 tpy

CO: 35.17 tpy

VOC: 6.39 tpy

Performance Tests

3. Permittee shall perform an annual performance test for NO_x and CO.

Fuel Analysis

4. The sulfur content of the natural gas should not exceed 0.8% by weight.
5. Permittee shall monitor sulfur content on a daily basis.

On January 1, 1994, a performance test showed that Turbine #1 at Hackberry compressor station exceeded the permitted emission rate for NO_x by about 1.4 lb/hr. EPNG subsequently submitted a minor permit revision to increase the emission limit for NO_x. The minor revision (#M151198R1-96) that was issued removed the emission limitations for NO_x and CO, since there were no underlying applicable requirements for them. Minor permit revision number M151198R1-96 issued on October 25, 1994 changed the following emission limits:

1. Removed: The "Maximum allowable emission rates" Table, because there are no underlying applicable requirements to limit emissions of

2. Added: Permittee shall not cause to be discharged... any gases which contain sulfur dioxide

nitrogen oxides
or carbon mon-
oxide.

in excess of
0.015% by vol-
ume at 15% ox-
ygen and on a
dry basis.

3. Added: Permittee shall not cause to be discharged...particulate matter in excess of that

determined
by the following
equation:

$$E = 1.02Q^{0.769}$$

where:

E = the maxi-
mum allowable
particulate emis-
sions rate in
pounds-mass
per hour

Q = heat input in
million BTU/hr

The most recent performance test was conducted on January 23 and 24, 1997. The following results are not subject to an emission limitation:

UNIT 1A - GE Frame 3

NO_x 43.6 lb/hr

CO 0.6 lb/hr

UNIT 2A - GE Frame 3

NO_x 42.73 lb/hr

CO 0.2 lb/hr

There have been no recorded violations of any permit conditions.

Additional note: EPNG states in their Title V permit application that both turbines are 7635 hp. However, Installation Permit #65030 only allowed EPNG to uprate from 6950 hp to 7298 hp. According to Jerry Comaduran of EPNG, the original horsepower (6950) stated in the installation permit was incorrect. Instead of each turbine rated at 6950 hp, they were actually 7287 hp. The reason this misunderstanding occurred was because the turbines include an on-board generator of 337 hp, which was mistakenly not included in the permit application. Therefore, when the turbines were uprated by 348 hp in 1991, their new rating became 7635 hp.

Emissions

The Title V application provides the following maximum potential emission rates for both turbines:

NO _x :	460.95 tpy
CO: 70.34 tpy	
VOC:	12.79 tpy
SO ₂ : 0.29 tpy	
Formaldehyde: 5.90 tpy	

These emission rates were based on emission factors (e.g. AP-42), theoretical stoichiometric considerations and 8760 hours of operation per year. They have also reported test data based on testing carried out in 1993. The measured hourly emission rates when multiplied with the actual hours of operation in 1993 give the following actual emissions for that year:

NO _x :	294.80 tpy (test data, actual hours)
CO:	8.82 tpy (test data, actual hours)
VOC:	1.16 tpy (test data, actual hours)
SO ₂ :	0.23 tpy (emission factors, actual hours)
Formaldehyde:	4.65 tpy (emission factors, actual hours)

The emissions inventory (EI) for the year 1995, submitted to the Arizona Department of Environmental Quality (ADEQ) reported the following emissions:

NO _x :	292.35 tpy
CO:	13.71 tpy
SO ₂ :	0.25 tpy
VOC:	0.35 tpy

Permit Contents : Attachment B

EPNG received an installation permit (#65030) to uprate their existing engines that were installed in 1966 from 6950 hp to 7298 hp (actually 7635 hp, see explanation above). Because this change resulted in an increase in emissions, the permit included regulations from 40 CFR 60 Subpart A and GG. However, EPNG stated in correspondence dated September 28, 1995 that the change constituted a screwdriver uprate and was performed without a capital expenditure. According to 40 CFR 60.14(e), if an increase in production rate of an existing facility can be accomplished without a capital expenditure, than that by itself shall not be considered a modification. Therefore, EPNG's Hackberry Compressor station is not subject to NSPS.

The state rule that regulates the gas turbine operations is *R18-2-719 : Standards of performance for existing stationary rotating machinery*. This state rule considers emissions of three pollutants (i) particulate matter, (ii) visible emissions, and (iii) sulfur dioxide.

Emission Limits/Standards

A. Regenerative Cycle Gas Turbines

The pollutants that require monitoring under A.A.C. R18-2-719 are PM, SO₂ and Opacity. Other pollutants included in the emission limits table of the permit are NO_x, CO, VOCs and HAPs.

PM: Natural gas combustion results in negligible particulate matter emissions. The maximum potential particulate emissions from both gas turbines at the Hackberry station were calculated to be 10.74 tpy. The emissions standard in R18-2-719.C.1 imposes a particulate matter emissions limit of 58.7 tpy per turbine.

SO₂: The operating permit requires EPNG to combust only natural gas for turbine operations. In addition, the sulfur content of the natural gas must be less than 0.8%.

NO_x, CO, VOC and HAPS: There are no emissions limitations for these pollutants.

Opacity: The visible emissions standard, R18-2-719.E, imposes a 40% opacity limitation.

B. Non-point sources

The standards in Article 6 are applicable requirements for non-point sources. The following sources will be monitored:

1. Driveways, parking areas, vacant lots
2. Unused open areas
3. Open areas (Used, altered, repaired, etc.)
4. Construction of roadways
5. Material transportation
6. Material handling
7. Storage piles
8. Stacking and reclaiming machinery at storage piles

All of these areas must comply with the opacity limitation of 40%. The control measures for these sites include gravel for driveways and native vegetation for unused open areas. Most of the other sources require control measures of dust suppressants and/or wetting agents. Material transportation and storage piles also include covering the material, while stacking and reclaiming includes minimizing fall distance.

EPNG has indicated in the application that rare instances of open burning may occur. The condition in the permit directs EPNG to obtain a permit from ADEQ, or the local officer in charge of issuing burn permits.

C. Other Periodic Activities

Abrasive Blasting

EPNG has indicated in the permit application that there might be a few occasions on which abrasive blasting activities are conducted on-site. R18-2-726 and R18-2-702.B are the applicable requirements. The Title V permit requires EPNG to either wet blast or use effective enclosures to reduce visible emissions to less than 40% opacity.

Spray Painting

EPNG has indicated in the permit application that there might be a few occasions on which spray painting activities are conducted on-site. R18-2-727 and R18-2-702.B are the applicable requirements. Volatile Organic Compounds (VOC's)

and Opacity are the regulated pollutants. R18-2-727.A and R18-2-727.B are included in the approved State Implementation Plan (SIP). R18-2-727.C and R18-2-727.D are also a part of the approved SIP. They are present in the definitions section of the SIP as R9-3-101.117. EPA approved SIP provision R9-3-527.C is not present in the amended rule. However, R9-3-527.C is an applicable requirement, and is federally enforceable until the current State SIP is approved by the EPA. The Title V permit requires EPNG to capture at least 96% of the overspray (except for architectural coating or spot painting). Also, EPNG shall not dispose by evaporation more than 1.5 gallons of photochemically reactive solvent in any one day.

Mobile Sources

EPNG has indicated in the permit application that there might be a few occasions on which “mobile source” activities are conducted. The following sources will be monitored:

1. Off road machinery
2. Roadway and site cleaning machinery
3. Roadway and site cleaning

R18-2-801, R18-2-802, and R18-2-804 are the applicable requirements. These areas must comply with the opacity limitation of 40%. Control measures include dust suppressants and/or wetting agents.

Monitoring and Recordkeeping Requirements

A. Regenerative Cycle Gas Turbines

PM: As noted in a preceding discussion, natural gas combustion results in minimal particulate matter emissions. It was therefore decided that even though an emissions standard exists for particulate matter, it would be unnecessary and impractical to have a rigorous monitoring schedule for the particulate standard. In addition, "Pipeline-quality" natural gas has to conform to standards approved by the Federal Energy Regulatory Commission (FERC). One of the standards in this agreement specifies that the heating value be greater than or equal to 967 Btu per cubic foot. Therefore, it was decided to require EPNG to record the daily lower heating value of the fuel, or maintain a copy of the FERC approved Tariff agreement, which will show that EPNG is maintaining compliance with the lower heating value requirement.

SO₂: Another one of the FERC standards limits the sulfur content in the gas to less than 5 grains/100 scf (which is equivalent to 0.017 weight percent of sulfur). It was decided to require EPNG to record the daily sulfur content of the fuel, or maintain a copy of the FERC approved Tariff agreement, which will show that EPNG is maintaining compliance with the sulfur content requirement.

NO_x, CO, VOC, HAPs: EPNG must keep a record of dates of operation of each turbine.

Opacity: There is no specific monitoring/recordkeeping requirement for this pollutant.

B. Non-point Sources

The specific non-point sources are listed in the above section. Monitoring and recordkeeping requirements for driveways includes maintaining the gravel, and keeping a log of dates new gravel is added. Unused open areas includes a monthly status of the areas and dates fresh vegetation was added. All other non-point sources require a

record of the date and type of activity performed, and the type of controls used. Also, monitoring requirements for the applicable open burning rule may be satisfied by keeping all open burn permits on file.

C. Other Periodic Activities

Abrasive Blasting

Monitoring and recordkeeping requirements for abrasive blasting consist of maintaining a log of the date and type of project, and the control measures used.

Spray Painting

Monitoring and recordkeeping requirements for spray painting consist of maintaining a log of the date and duration of the project, control measures used, and the MSDS of paints used.

Mobile sources

The specific mobile sources are listed in the above section. Monitoring and recordkeeping requirements for off road machinery and cleaning machinery consist of maintaining records of all vehicular maintenance. Roadway and site cleaning requires maintaining a log of the date and duration of project, and the control measures used.

Reporting Requirements

A. Regenerative Cycle Gas Turbines

PM: Because EPNG may comply with the PM emission limit by maintaining a copy of the FERC-approved Tariff agreement, the reporting requirement is to notify the Department of any change in the Tariff agreement relating to lower heating value of fuel within 30 days.

SO₂: EPNG may comply with the emission limit by monitoring the daily sulfur content or maintaining a copy of the FERC-approved Tariff agreement. Therefore, the reporting requirement is to notify the Department when any daily sulfur content is greater than 0.8%, or of any change in the Tariff agreement relating to sulfur content within 30 days.

NO_x, CO, VOCs and HAPs: EPNG must report the dates of operation of each turbine.

Testing Requirements

A. Regenerative Cycle Gas Turbines

EPNG must conduct a performance test on each turbine for NO_x once during the permit term after the turbine has been operated for 15 cumulative days. Operating Permit #M151198-96 required EPNG to conduct an annual performance test for NO_x and CO. Because of the low emissions for CO demonstrated above in the performance test and emissions inventory, we are hereby revising the operating permit to remove the requirement to conduct an annual performance test for CO through this Part 70 renewal process.

List of Special Provisions

In their application, EPNG provided a list of special provisions that they wanted to be addressed in the permit. This list is located in Tab 1 of the application. They have been addressed in the following manner:

Maintenance and Inspection (Item 1), Emergency Shut Down Systems (Item 3), Cathodic protection system (Item 4), General Maintenance & Construction Activities (Item 6), Start-up, Shutdown & Maintenance (Item 8), Insignificant Activities (Item 9)

It was decided that each of these items qualified for classification as an insignificant activity, and as such was included in the list in Attachment "E".

Hazardous Air Pollutants (Item 2): Refer to Sections VI and X, Attachment "A".

Abrasive Blasting (Item 5): Abrasive blasting activities have an applicable requirement in the Arizona Administrative Code A.A.C. Also, according to the definition in AAC R18-2-101.54, for an activity to be classified as insignificant, it should not have *any* applicable requirement. All projects have to comply with the general requirements of R18-2-726 and R18-2-702(B). Refer to Attachment B, I.C.1 and II.C.1.

Spray Painting (Item 7): A similar argument as in Item 5 above provides the reason for including R18-2-726 as an applicable requirement. Refer to I.C.2 and II.C.2.

Emissions Trading (Item 10): ADEQ has determined that EPNG should apply for a permit revision (if necessary) in case there are any changes in the permitted equipment.

Location of records (Item 11): Refer Section II.B, Attachment "B".

Portable Sources (Item 12): Any contractor operating portable sources on site will need to obtain an air permit (if required) to cover the portable source operation.

Air Conditioners (Item 13): Refer to Section XXI, Attachment "A".

Asbestos (Item 14): Refer to Attachment "C".

Performance Tests (Item 15): Refer to Section VI, Attachment "B".

